

**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>117506 PEL</b>	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. <b>PCT/SE2003/002047</b>	International filing date ( <i>day/month/year</i> ) <b>19-12-2003</b>	Priority date ( <i>day/month/year</i> )
International Patent Classification (IPC) or national classification and IPC See Supplemental Box		
Applicant <b>Telefonaktiebolaget LM Ericsson et al</b>		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>																									
<p>4. This report contains indications relating to the following items:</p> <table> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </tbody> </table>		<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand <b>03-05-2005</b>	Date of completion of this report <b>17-03-2006</b>
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**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

International application No.  
PCT/SE2003/002047

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of: **Cover sheet**

**International patent classification (IPC)**

**H04Q 7/36** (2006.01)

**H04Q 7/38** (2006.01)

**H04B 7/26** (2006.01)

**H04L 12/56** (2006.01)

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2003/002047

## Box No. I Basis of the report

1. With regard to the language, this report is based on:

the international application in the language in which it was filed  
 a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of:  
 international search (Rules 12.3(a) and 23.1(b))  
 publication of the international application (Rule 12.4(a))  
 international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

the international application as originally filed/furnished  
 the description:  
 pages \_\_\_\_\_ as originally filed/furnished  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 the claims:  
 pages \_\_\_\_\_ as originally filed/furnished  
 pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 the drawings:  
 pages \_\_\_\_\_ as originally filed/furnished  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3.  The amendments have resulted in the cancellation of:

the description, pages \_\_\_\_\_  
 the claims, Nos. \_\_\_\_\_  
 the drawings, sheets/figs \_\_\_\_\_  
 the sequence listing (*specify*): \_\_\_\_\_  
 any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

the description, pages \_\_\_\_\_  
 the claims, Nos. \_\_\_\_\_  
 the drawings, sheets/figs \_\_\_\_\_  
 the sequence listing (*specify*): \_\_\_\_\_  
 any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims	<u>1 - 24</u>	YES
	Claims	_____	NO
Inventive step (IS)	Claims	_____	YES
	Claims	<u>1 - 24</u>	NO
Industrial applicability (IA)	Claims	<u>1 - 24</u>	YES
	Claims	_____	NO

**2. Citations and explanations (Rule 70.7)**

The claimed invention relates to a method and an arrangement for minimizing interference within a cell, as well as between cells in a wireless data transmission system. This is achieved by way of allotting one time slots to two different user equipments, each user equipment being located in different cell segments, simultaneously.

Reference is made to the following documents:

D1 US 6301238 B1  
D2 US 20030227889 A1

In the written opinion of 04-10-2005 D1 was regarded as the most relevant prior art. This document does, however, only discuss simultaneous use of a fraction of a time slot of different user equipments and, thus, no time slots are allotted simultaneously to different user equipments. In this report focus is set on the applicants argumentation against D2, which is the document which is considered to be the most relevant art in the following argumentation.

D2 refers to a method for allocating bandwidth, wherein a cell is divided into sectors. A subset of the total bandwidth is used in each sector. A scheduler is scheduling at least two users for transmission on a subset, i.e. a plurality of users are allocated to use the same timeslot in the same sector (see abstract; paragraph [0004]-[0005]; [0007]-[0010]; [0049]; [0082]-[0084]; [0088]-[0091]).

The subject matter of claim 1 differs from D1 in that D1 fails to describe a method in which the same time slot is allocated to user equipment located in different cell segments.

By allocating the same time slot to different sectors intra-cell interference is reduced.

.../...

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V(I)

The problem to be solved is, therefore to minimize the intra-cell interference even further.

The person skilled in the art facing this problem is aware of the fact that one solution is to allocate interferers into separate sectors. As long as the reuse pattern is considered, this modification of the method described in D1 is obvious to the person skilled in the art. Consequently, it is considered obvious to a person skilled in the art to provide a method in which two or more user equipments are receiving information simultaneously in two different sectors of the same cell, starting from the information retrieved from D2. Consequently, the claim 1 is novel, but fails to involve an inventive step.

For the same reason also the arrangement of claim 14 may be realised by a person skilled in the art, utilising the knowledge retrieved from D2, and, thus, also this claim fails to involve an inventive step.

The invention as claimed in claims 2 and 15 differ from D2 in that D2 fails to suggest allotting of one time slot to two mobile stations located in different cell segment in different cells. The problem to be solved is thereby to provide better utilisation of the resources not only within a cell, but also between cells. Scheduling, however, commonly involve conditions for neighbouring cells. Interference problems for example are commonly less severe between different sectors belonging to different cells than what is the case for sectors within one single cell.

The person skilled in the art therefore, would be able to implement the solution described in D1 also in an inter-cell arrangement without the requirement of any inventive skill. Therefore, the invention as claimed in claims 2 and 15 is novel and industrially applicable, but fail to involve an inventive step.

Claims 3-5, 8, 10, 11, 13, 16, 17, 23 and 24 only describe considerations which are obvious to the person skilled in the art having common knowledge of sectorised cells and specifically about D2. These claims therefore fail to involve an inventive step.

What is suggested in claims 18 and 21 is already known from D2. These claims therefore fail to involve an inventive step.

Claims 6 and 19 only describe an alternative which is obvious to the person skilled in the art. Also these claims therefore fail to involve an inventive step.

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V(II)

What is described in claims 7 and 20 is already known from D2. As the applicant mentions in the answer of 04-11-2005 the user equipment do not use the same frequency. The problem of how to allocate frequencies is, however, not mentioned in either claim 1 or 14, nor in claim 7 or 20. Therefore, also claim 7 and 20 fail to involve an inventive step.

D2 proposes allocation of bandwidth in a transmission system that uses High Speed Dowlink Packet access (HSDPA). Considering this, also claim 12 fails to involve an inventive step.

The positioning method which is proposed in claims 9 and 22 is well known to the person skilled in the art. Therefore, these claims fail to involve an inventive step.

To sum up, claims 1-24 describe an invention which is novel, and which is industrially applicable, but fail to involve an inventive step.